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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/664,951	09/22/2003	Robert G. Swisher	1794A1	5726

7590 01/21/2005  
PPG Industries, Inc.  
Law-Intellectual Property 39S  
One PPG Place  
Pittsburgh, PA 15272

EXAMINER

MULLER, BRYAN R

ART UNIT	PAPER NUMBER
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3723

DATE MAILED: 01/21/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/664,951

Applicant(s)

SWISHER ET AL.

Examiner

Bryan R Muller

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-68 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-68 is/are rejected.
- 7) ☒ Claim(s) 27 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Double Patenting*

1. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

2. Claim 27 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 8. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

3. Claims 1-68 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1-5, 8-17, 24-28, 31-44, 47, 50-54, 51 and 61-69 of U.S. Patent Application No. 10/664,860 (pub. 2004/0102137) in view of Birang (5,893,796).

4. In application no. 10/664,860, Allison et al. discloses in the claims all the structure and properties of the invention claimed in the current application with only minor differences. Allison discloses a polishing pad comprising three layers with no

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apertures or windows. Birang discloses a polishing pad with a first layer with an aperture in line with a transparent polyurethane plug fixed within a second layer and teaches that such apertures and windows are common and advantageous within polishing pads to accurately determine endpoints during the polishing process (col. 2, lines 1-6 and 37-38). Therefore, it is obvious to provide the polishing pad of Allison with an aperture in the top layer, aligned with a window in the middle layer and it would further be obvious to provide an aligning aperture in the sublayer to allow for use of the window through this aperture. Other minor differences exist between the claims of Allison and the current application, such as the at least 0.02 inch thickness of the sublayer as stated in claims 14 and 37 of Allison, differs from the at least 0.04 inch thickness of the third layer as claimed by applicant in respective claims 16 and 35 but the 0.04 inch thickness does meet the claimed at least 0.02 inch thickness as claimed by Allison. Allison also claims that the middle layer has a thickness of 0.03 inches or less in claim 35, but claim 29 of the current application claims that the second layer has a thickness of 0.065 inches or less. The range of the claim in the current application contains all values claimed in the claim of Allison and would therefore be equivalent. As for claims 54-56, it is disclosed by Birang that the window is made of Polyurethane, thus providing that window comprises a resin coating of a urethane system.

### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claim 37 recites the limitation "third layers" in line 1. There is insufficient antecedent basis for this limitation in the claim. A third layer is not disclosed in claim 30, of which claim 37 is dependent.

3. Claim 38 recites the limitation "third layer" in line 2. There is insufficient antecedent basis for this limitation in the claim. A third layer is not disclosed in claim 30, of which claim 38 is dependent.

***Claim Rejections - 35 USC § 102/103***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 68 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Birang (5,893,796).

6. Birang discloses in fig. 3D a polishing pad with a first layer (22) having an opening (630), a second layer ((20) with a partially transparent window (608) and a third layer (16) having an opening (30) wherein the first and second layers are connected through an adhesive attaching the window to each of them and it would be obvious to attach the third layer to the second to prevent the aperture in the third layer from becoming misaligned with the window and apertures in the other two layers and interfering with the endpoint detection of the system.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1-3, 11-14, 18 and 59-61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birang ('796) in view of Lombardo (6,585,574).

9. In reference to claims 1 and 2, Birang discloses the polishing pad as discussed supra but fails to disclose that the first layer of the pad absorbs at least two percent and less than fifty percent by weight of the polishing slurry. Lombardo discloses a similar multi-layer polishing pad and discloses that the first layer of the pad has hydrophilic properties and absorbs less than 4% moisture (such as slurry) by weight (col. 2, lines 50-53) and that the hydrophilic property is advantageous because the wafer polishing efficiency can be improved and wafer polishing costs may be lowered (col. 3, lines 21-24). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to make the first layer of the Birang invention out of the same hydrophilic material as the Lombardo invention to increase efficiency and decrease cost. The range of 4% or less, disclosed by Lombardo, provides for several values within the range claimed by the applicant and is thus an appropriate rejection (see MPEP 2131).

10. In reference to claim 3, Lombardo further discloses that the pad surface (first layer) is composed of a polymeric matrix material, which is either a thermoplastic material or a cross-linked material.

11. In reference to claims 11 and 12, Birang discloses that the first and second layers are partially connected by an adhesive as discussed earlier and further discloses that the adhesive used may be elastomeric polyurethane, rubber cement or epoxy (col. 7, lines 33-38), all of which are contact and curable adhesives and also states that the adhesive material may be cured more quickly by the application of heat (col. 7, lines 49-50) making them thermosetting adhesives.

12. In reference to claims 13, 14, 18 and 19, Birang shows the apertures in the first and third layers aligned with the window in the second layer, it is shown by Birang that the apertures in the first and third layers are aligned with the window in the second layer and it is obvious, as discussed supra, to at least partially connect the first, second and third layers.

13. In reference to claims 59-61, the obvious combinations of the inventions of Birang and Lombardo, as discussed supra, would be produced through a method comprising at least partially connecting a first layer having an opening to a second layer, wherein at least a portion of said second layer comprises an at least partially transparent window, and wherein said first layer absorbs at least two percent by weight of polishing slurry based on total weight of said first layer and at least partially connecting a third layer having an opening to said second layer wherein said first and second layers are at least partially connected by an adhesive material.

14. Claims 4, 5, 9, 10 and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birang ('796) in view of Lombardo (6,585,574) and further in view of Breivogel (5,212,910).

15. In reference to claims 4, 5, 9, 10, 16 and 17, the obvious combination of Birang and Lombardo, as discussed above, fails to disclose the relative thicknesses of each of the three layers. Breivogel discloses an improved three-layered polishing pad wherein a first polishing layer (referred to as third layer by Breivogel) is between 0.1 – 2.0 mm thick (approx. 0.004 – 0.8 inches), a second layer is about 1mm thick (approx. 0.04 inches), and a third cushioning layer (referred to as first layer by Breivogel) is also about 1mm thick (claims 10, 7 and 5 respectively). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to make the corresponding three layers of the Birang and Lombardo combination the same relative thicknesses as those disclosed by Breivogel in order to improve the invention. Because the thickness disclosed by Breivogel are within overlapping or touching the ranges disclosed by applicant, this rejection is made valid (see MPEP 2131).

16. In reference to claim 15, the obvious combination of Birang and Lombardo as discussed above fails to disclose the material that the third layer is to be constructed of. Breivogel discloses that the third cushioning layer in his improved polishing pad is to be made of foam rubber (claim 4). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to make the third layer out of foam rubber to improve the invention.



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17. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birang ('796) in view of Lombardo (6,585,574) and further in view of Hyde (5,257,478).

18. The obvious combination of Birang and Lombardo as discussed above fails to disclose the material that the middle or second layer is to be comprised of, but Hyde discloses a polishing pad with three layer wherein the middle or second layer (91) is comprised of a non-compressible material such as polyester (col. 6, lines 1-5). It is commonly known in the art that a backing layer is advantageous to provide a rigid support for the rest of the substantially polishing pad. Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to make the second layer of the polishing pad out of a non-compressible material such as polyester in order to provide a rigid support for the rest of the substantially polishing pad.

19. Claims 8 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birang ('796) in view of Lombardo (6,585,574) and further in view of Masumura (6,306,021).

20. The obvious combination of Birang and Lombardo as discussed above fails to disclose the material that the middle or second layer is to be comprised of, but Masumura discloses a three layered polishing pad wherein the middle layer is a hard plastic sheet (abstract, lines 7-11) and that two possible hard plastics that may be used to provide excellent performance are PET or polyimide (col. 7, lines 35-40). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to make the second layer of the polishing pad out of a hard plastic such as PET or polyimide to provide excellent performance.

21. Claims 20, 21, 30-33, 37, 38 and 62-64 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birang ('796) in view of Sevilla (6,126,532).

22. In reference to claims 20 and 21, Birang discloses the polishing pad as discussed supra but fails to disclose that the first layer of the pad has a porosity of at least two percent by volume. Sevilla teaches that the portion of a polishing pad that comprises the polishing surface has been to possess the necessary flexibility and durability during use if they have a porosity of 25-50% (col. 5, lines 30-34). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to provide the first polishing layer of the polishing pad with a porosity between 25 and 50% in order to provide the necessary flexibility and durability during use.

23. In reference to claims 30-33, 37 and 38, it is obvious as discussed supra that the three layers would be at least partially connected using a contact, curable or thermosetting adhesive such that the apertures of layers one and three will at least partially align with the window in layer two.

24. In reference to claims 62-64, the obvious combinations of the inventions of Birang and Sevilla, as discussed supra, would be produced through a method comprising at least partially connecting a first layer having an opening to a second layer, wherein at least a portion of said second layer comprises an at least partially transparent window, and wherein said first layer has a porosity of at least two percent by volume based on total volume of the said first layer and at least partially connecting a

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third layer having an opening to said second layer wherein said first and second layers are at least partially connected by an adhesive material.

25. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Birang ('796) in view of Sevilla (6,126,532) and further in view of Lombardo ('574).

26. The obvious combination of Birang and Sevilla, as discussed supra, fails to disclose the material that the first layer is constructed from. As discussed supra, Lombardo discloses a polishing pad composed of a polymeric matrix material, which is either a thermoplastic material or a cross-linked material that is advantageous.

Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to produce the first layer from one of these materials to provide the advantages discussed supra.

27. Claims 23, 24, 28, 29 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birang ('796) in view of Sevilla (6,126,532) and further in view of Breivogel (5,212,910).

28. In reference to claims 23, 24, 28, 29, 35 and 36, the obvious combination of Birang and Sevilla, as discussed above, fails to disclose the relative thicknesses of each of the three layers. Breivogel discloses an improved three-layered polishing pad and discloses the thicknesses of each layer, as discussed supra. Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to make the corresponding three layers of the Birang and Sevilla combination the same relative thicknesses as those disclosed by Breivogel in order to improve the invention.

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29. In reference to claim 34, the obvious combination of Birang and Sevilla, as discussed above, fails to disclose the material that the third layer is to be constructed of. Breivogel discloses that the third cushioning layer in his improved polishing pad is to be made of foam rubber (claim 4). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to make the third layer out of foam rubber to improve the invention.

30. Claims 25 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birang ('796) in view of Sevilla (6,126,532) and further in view of Hyde (5,257,478).

31. The obvious combination of Birang and Sevilla, as discussed above, fails to disclose the material that the middle or second layer is to be comprised of, but Hyde discloses a polishing pad with three layers, as discussed supra and it would be obvious to one of ordinary skill in the art at the time the invention was made to make the second layer of the polishing pad out of a non-compressible material such as polyester in order to provide a rigid support for the rest of the substantially polishing pad.

32. Claims 39, 42, 44, 45, 47-50, 52-58 and 65-67 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birang ('796) in view of Hyde (5,257,478).

33. In reference to claims 39, 42, 44 and 45, Birang discloses the polishing pad as discussed supra but fails to disclose that the first layer of the pad has a percent volume compressibility greater than the second layer. Hyde discloses a three layered polishing pad, as discussed supra, and further discloses that the polishing layer should have a greater volume compressibility as to minimize the possibility of causing damage to

fragile features of the work surface (col. 5, lines 62-65) and that the second layer is a non-compressible material such as polyester (col. 6, lines 3-5). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to make the first layer of greater compressibility than the second layer so that the first layer will minimize the possibility of causing damage to fragile features of the work surface and the second layer will provide a rigid support for the more flexible first layer, as discussed supra.

34. In reference to claims 47-50, 52 and 53, it is obvious, as discussed supra, that the three layers would be at least partially connected using a contact, curable or thermosetting adhesive such that the apertures of layers one and three will at least partially align with the window in layer two.

35. In reference to claims 54-56, in the obvious combination of Birang and Hyde, Birang disclose that the window is made of Polyurethane, thus providing that window comprises a resin coating of a urethane system.

36. In reference to claim 57 and 58, in the obvious combination of Birang and Hyde, Birang further discloses that there may be grooves or pores cut into the polishing layer of the pad and any arrangement of grooves or pores may inherently be considered a pattern.

37. In reference to claims 65-67, the obvious combinations of the inventions of Birang and Hyde, as discussed supra, would be produced through a method comprising at least partially connecting a first layer having an opening to a second layer, wherein at least a portion of said second layer comprises an at least partially transparent window,

and wherein said first layer has a percent volume compressibility greater than the second layer and at least partially connecting a third layer having an opening to said second layer wherein said first and second layers are at least partially connected by an adhesive material.

38. Claims 40 and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Birang ('796) in view of Hyde (5,257,478) and further in view of Moloney (Pub.No. 2001/0007810).

39. The obvious combination of Birang and Hyde, as discussed supra, fails to disclose the actual percent volume compressibility of the first layer. Moloney discloses a polishing assembly for achieving a uniformly polished substrate (abstract, lines 1-3) and further discloses that a preferred pad has a compressibility between 0.7 and 6.6 percent (paragraph 0082, lines 20-31). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to make the first layer of a material with a compressibility between 0.7 and 6.6 percent in order to achieving a uniformly polished substrate that is advantageous in the art.

40. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Birang ('796) in view of Hyde (5,257,478) and further in view of Lombardo ('574).

41. The obvious combination of Birang and Hyde, as discussed supra, fails to disclose the material that the first layer is constructed from. As discussed supra, Lombardo discloses a polishing pad composed of a polymeric matrix material, which is either a thermoplastic material or a cross-linked material that is advantageous. Therefore, it would be obvious to one of ordinary skill in the art at the time the invention

was made to produce the first layer from one of these materials to provide the advantages discussed supra.

42. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Birang ('796) in view of Hyde (5,257,478) and further in view of Masumura (6,306,021).

43. The obvious combination of Birang and Hyde as discussed above fails to disclose the material that the middle or second layer is to be comprised of, but Masumura discloses a three layered polishing pad wherein the middle layer is a hard plastic sheet (abstract, lines 7-11) and that two possible hard plastics that may be used to provide excellent performance are PET or polyimide (col. 7, lines 35-40). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to make the second layer of the polishing pad out of a hard plastic such as PET or polyimide to provide excellent performance.

44. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Birang ('796) in view of Hyde (5,257,478) and further in view of Breivogel (5,212,910).

45. The obvious combination of Birang and Hyde, as discussed above, fails to disclose the material that the third layer is to be constructed of. Breivogel discloses that the third cushioning layer in his improved polishing pad is to be made of foam rubber (claim 4). Therefore, it would be obvious to one of ordinary skill in the art at the time the invention was made to make the third layer out of foam rubber to improve the invention.

### ***Conclusion***

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46. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Elledge (2001/0044261), Wiswesser (6,159,073), Jensen (6,261,168), Sato (6,139,400), Obeng (6,439,968), Swisher (6,477,926), Ohta (2004/0235392) and Shimomura (JP 2002075933 A) all disclose polishing pads with properties similar or the same as those disclosed in this application.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Bryan R Muller whose telephone number is (703)305-0487. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph J Hail III can be reached on (703)308-2687. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



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